Atazanavir sulfate

sc-357292

Material Safety Data Sheet

Hazard Alert Code Key:	EXTREME	HIGH	MODERATE	LOW

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
Atazanavir sulfate

STATEMENT OF HAZARDOUS NATURE
CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

NFPA

SUPPLIER
Santa Cruz Biotechnology, Inc.
2145 Delaware Avenue
Santa Cruz, California 95060
800.457.3801 or 831.457.3800
EMERGENCY:
ChemWatch
Within the US & Canada: 877-715-9305
Outside the US & Canada: +800 2436 2255
(1-800-CHEMCALL) or call +613 9573 3112

SYNONYMS
C38-H52-N6-O7.H2SO4, "(3S, 8S, 9S, 12S)-3, 12-bis(1, 1-dimethylethyl)-8-hydroxy-4, 11-dioxo-9-", "(phenylmethyl)-6-[(4--(2-pyridinyl)phenyl]methyl]-2, 5, 6, 10, 13-", "pentaazatetradecanedioic acid, dimethylester, sulfate (1:1)", "2, 5, 6, 10, 13-pentaazatetradecanedioic acid, ", "3, 12-bis(1, 1-dimethylethyl)-8-hydroxy-4, 11-dioxo-9-(phenylmethyl)-6-", "[(4-(2-pyridinyl)phenyl)methyl]-, ", "dimethyl ester, (3S, 8S, 9S, 12S)-, sulfate (1:1) (salt)", BMS-232632-05, "HIV: 070W5", REYATAZ

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

		Min	Max
Flammability:	1		
Toxicity:	2		
Body Contact:	3		
Reactivity:	1		
Chronic:	2		

Min/Nil=0
Low=1
Moderate=2
High=3
Extreme=4

CANADIAN WHMIS SYMBOLS

EMERGENCY OVERVIEW

RISK

Risk of serious damage to eyes.

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

■ Accidental ingestion of the material may be damaging to the health of the individual.
■ Common side effects of treatment with HIV-I protease inhibitors (PI) include diarrhoea, nausea, vomiting, gastrointestinal discomfort, headache, asthenia, fatigue and taste disturbances.
Renal calculi (nephrolithiasis) are seen on occasion.
■ At sufficiently high doses the material may be cardiotoxic (i.
e.
■ At sufficiently high doses the material may be hepatotoxic(i.
e.

EYE

■ If applied to the eyes, this material causes severe eye damage.

SKIN

■ The material is not thought to produce adverse health effects or skin irritation following contact (as classified using animal models).
Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.
■ Open cuts, abraded or irritated skin should not be exposed to this material.
■ Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects.
Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

INHALED

■ Inhalation of dusts, generated by the material during the course of normal handling, may be damaging to the health of the individual.
■ Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.
■ Effects on lungs are significantly enhanced in the presence of respirableparticles.
■ The material can cause respiratory irritation in some persons.
The body's response to such irritation can cause further lung damage.

CHRONIC HEALTH EFFECTS

■ Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.
Angiolipomas (benign neoplasms of fatty tissue containing a proliferation of, often dilated, blood vessels) may represent a complication of protease-inhibitor (PI) therapy. A lipodystrophy syndrome, characterised by peripheral lipoatrophy and central adiposity, as well as hyperlipidaemia and insulin resistance, develops in many HIV-infected patients undergoing PI therapy. Several cases of patients who developed symptomatic angiolipomas after starting PI-therapy have now been reported. Symptomatic appearance of the lesions followed initiation of PIs by many months. The time course is similar to that reported for the appearance of central fat redistribution after beginning protease inhibitors. One study revealed a higher than expected prevalence of premature carotid vessel lesions in a HIV-patient group treated with PIs for at least 12 months. The overwhelming difference between the percentages of acquired lesions reported for healthy individuals (6.7%) and two seropositive groups including PI-naive (14.9%) and PI-experienced (52.7%) patients indicates that HIV-I positive patients have a much higher risk of endothelial damage which becomes remarkable in the case of patients treated with PI-containing regimes for prolonged periods of time. Individuals exhibiting the acquired lesion may be at increased risk of developing arteriosclerosis and vascular dysfunction. A significant number of HIV-infected individuals develop type 2 diabetes within 18 months of undertaking PI therapy. Myocardial infarction has also reportedly been associated with PI therapy (after 24-29 months of treatment). Several cases of disfiguring striae (stretch marks) in HIV-patients using PIs have been described; these occurred within 3-months of the start of therapy. The development of resistance and subsequent loss of drug activity constitutes the primary barrier to long-term efficacious use of HIV-I protease inhibitors. Mutations within the protease gene have been described following use of current inhibitors.
Overexposure to respirable dust may cause coughing, wheezing, difficulty in breathing and impaired lung function. Chronic symptoms may include decreased vital lung capacity, chest infections
Repeated exposures, in an occupational setting, to high levels of fine- divided dusts may produce a condition known as pneumoconiosis which is the lodgement of any inhaled dusts in the lung irrespective of the effect. This is particularly true when a significant number of particles less than 0.5 microns (1/50,000 inch), are present. Lung shadows are seen in the X-ray. Symptoms of pneumoconiosis may include a progressive dry cough, shortness of breath on exertion (exertional dyspnea), increased chest expansion, weakness and weight loss. As the disease progresses the cough produces a stringy mucous, vital capacity decreases further and shortness of breath becomes more severe. Other signs or symptoms include altered breath sounds, diminished lung capacity, diminished oxygen uptake during exercise, emphysema and pneumothorax (air in lung cavity) as a rare complication.
Removing workers from possibility of further exposure to dust generally leads to halting the progress of the lung abnormalities. Where

worker-exposure potential is high, periodic examinations with emphasis on lung dysfunctions should be undertaken
Dust inhalation over an extended number of years may produce pneumoconiosis.. Pneumoconiosis is the accumulation of dusts in the lungs and the tissue reaction in its presence. It is further classified as being of noncollagenous or collagenous types. Noncollagenous pneumoconiosis, the benign form, is identified by minimal stromal reaction, consists mainly of reticulin fibres, an intact alveolar architecture and is potentially reversible.
Atazanavir is secreted into rat milk and is distributed in foetal tissues. Woman who are nursing should avoid handling large quantities of the substance.
In at pre- and post- natal development the minimum maternal offspring toxicity (EC) was 1000 mg/kg/day. In rats, the drug did not affect male mating and fertility at doses of up to 140 mg/kg/day. In female rats, drug-related changes in the oestrus cycle were noted at a dose of 100 g/kg/day and higher; however, mating was not affected and only a minimal decrease in fertility was noted at a dose of 1400 mg/kg/day.
Atazanavir was not immunotoxic in rats treated at oral dose of up to 900 mg/kg/day.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
atazanavir sulfate	229975-97-7	>98

Section 4 - FIRST AID MEASURES

SWALLOWED
· If swallowed do NOT induce vomiting. · If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

EYE
■ If this product comes in contact with the eyes: · Immediately hold eyelids apart and flush the eye continuously with running water. · Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.

SKIN
■ If skin or hair contact occurs: · Flush skin and hair with running water (and soap if available). · Seek medical attention in event of irritation.

INHALED
· If fumes or combustion products are inhaled remove from contaminated area. · Lay patient down. Keep warm and rested.

NOTES TO PHYSICIAN
■ For HIV-proteinase inhibitors: Onset or aggravation of diabetes mellitus may require initiation or dose-adjustments of insulin or oral hypoglycaemic agents. Where diabetic ketoacidosis has occurred , hyperglycaemia may persist even after dicontinuance of PI therapy.
Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

Vapour Pressure (mmHG):	Not Available
Upper Explosive Limit (%):	Not Available
Specific Gravity (water=1):	Not Available
Lower Explosive Limit (%):	Not Available

EXTINGUISHING MEDIA
· Foam.
· Dry chemical powder.

FIRE FIGHTING
· Alert Emergency Responders and tell them location and nature of hazard.
· Wear breathing apparatus plus protective gloves.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS
■ A powder with a high resistivity is non-conductive and can retain static charges for extended periods. Every precaution to provide bonding and grounding is necessary. A powder with a high resistivity and a low minimum ignition energy (MIE less than 20 mJ) is most susceptible to ignition from static sources.
· Combustible solid which burns but propagates flame with difficulty.
· Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust may burn rapidly and fiercely if ignited.
Combustion products include: carbon monoxide (CO), carbon dioxide (CO2), nitrogen oxides (NOx), sulfur oxides (SOx), other pyrolysis products typical of burning organic material.
May emit poisonous fumes.

May emit corrosive fumes.
Dust Explosion Hazard Class 1
Dusts fall into one of three Kst* classes. Class 1 dusts; Kst 1-200 m3/sec; Class 2 dusts; 201-299 m3/sec.
Dusts with Minimum Ignition Energies (MIEs) of less than 10mJ are extremely sensitive to ignition.
Precautions should be as for flammable liquids and gases. They require that:
· plant is grounded
· personnel might also need to be grounded
· the use of high resistivity materials (such as plastics) should be restricted or avoided during handling or in packaging
· electrostatic hazards from bulk powders of high resistivity are considered.
Sensitivity to Static Discharge/ Dust Explosion Potential
Explosion Severity:
177 Kst (bar.m/s). Strong explosion energy.
963 bar/sec. Maximum rate of pressure rise.
8.7 bar. Maximum explosion pressure.
Minimum Ignition Energy: 3-10 mJ
material is extremely susceptible to igniting a dust cloud under certain conditions due to low minimum ignition temperature
Volume Resistivity (ambient):
3.8 x 10 exp 13 ohm.m:
Charge Decay Time (Ambient):
33 minutes
Minimum Ignition Temperature (dust cloud):
440-460 deg. C.
Endotherm between 159 deg. C - 198 deg. C.
Layer decomposition: Material begins to exhibit exothermic activity at temperature of 390-440 C. Maintain maximum process temperatures at least 20 deg C below onset of this temperature.

FIRE INCOMPATIBILITY

■ Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids,chlorine bleaches, pool chlorine etc. as ignition may result.

PERSONAL PROTECTION

Glasses:
Chemical goggles.
Gloves:
Respirator:
Particulate

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS
· Clean up waste regularly and abnormal spills immediately.
· Avoid breathing dust and contact with skin and eyes.
· Wear protective clothing, gloves, safety glasses and dust respirator.
· Use dry clean up procedures and avoid generating dust.
· Vacuum up or sweep up. NOTE: Vacuum cleaner must be fitted with an exhaust micro filter (HEPA type) (consider explosion-proof machines designed to be grounded during storage and use).
· Dampen with water to prevent dusting before sweeping.
· Place in suitable containers for disposal.
MAJOR SPILLS
■ Moderate hazard.
· CAUTION: Advise personnel in area.
· Alert Emergency Responders and tell them location and nature of hazard.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

· Avoid all personal contact, including inhalation.
· Wear protective clothing when risk of exposure occurs.
Empty containers may contain residual dust which has the potential to accumulate following settling. Such dusts may explode in the presence of an appropriate ignition source.
· Do NOT cut, drill, grind or weld such containers.
· In addition ensure such activity is not performed near full, partially empty or empty containers without appropriate workplace safety authorisation or permit.

RECOMMENDED STORAGE METHODS

■ Glass container.
· Polyethylene or polypropylene container.
· Check all containers are clearly labelled and free from leaks.

STORAGE REQUIREMENTS

■ Observe manufacturer's storing and handling recommendations.

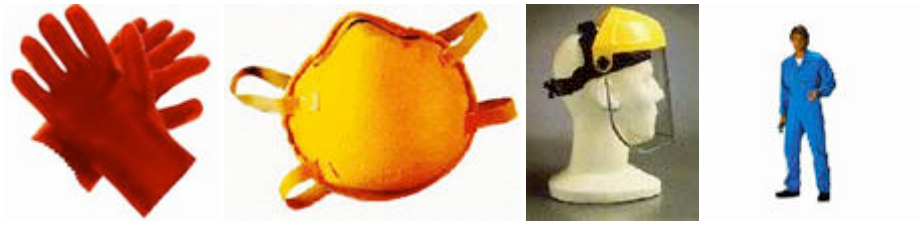
Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m³	STEL ppm	STEL mg/m³	Peak ppm	Peak mg/m³	TWA F/CC	Notes
Canada - Alberta Occupational Exposure Limits	atazanavir sulfate (Particulate Not Otherwise Regulated - Respirable)		3						
Canada - Prince Edward Island Occupational Exposure Limits	atazanavir sulfate (Particles (Insoluble or Poorly Soluble) [NOS] Respirable particles)		3						See Appendix B current TLV/BEI Book

ENDOELTABLE

PERSONAL PROTECTION



RESPIRATOR

• particulate.

EYE

■ When handling very small quantities of the material eye protection may not be required.
For laboratory, larger scale or bulk handling or where regular exposure in an occupational setting occurs:
· Chemical goggles
· Face shield. Full face shield may be required for supplementary but never for primary protection of eyes
· Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

HANDS/FEET

■ Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: such as:
· frequency and duration of contact,
· chemical resistance of glove material,
· glove thickness and
· dexterity
Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739).
· When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended.
· When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended.
· Contaminated gloves should be replaced.
Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.
· Rubber gloves (nitrile or low-protein, powder-free latex). Employees allergic to latex gloves should use nitrile gloves in preference.
· Double gloving should be considered.
· PVC gloves.
· Protective shoe covers.
· Head covering.

Experience indicates that the following polymers are suitable as glove materials for protection against undissolved, dry solids, where abrasive particles are not present.
· polychloroprene
· nitrile rubber
· butyl rubber
· fluorocaoutchouc
· polyvinyl chloride
Gloves should be examined for wear and/ or degradation constantly.

OTHER

· For quantities up to 500 grams a laboratory coat may be suitable.
· For quantities up to 1 kilogram a disposable laboratory coat or coverall of low permeability is recommended. Coveralls should be buttoned at collar and cuffs.
· For quantities over 1 kilogram and manufacturing operations, wear disposable coverall of low permeability and disposable shoe covers.
· For manufacturing operations, air-supplied full body suits may be required for the provision of advanced respiratory protection.
· Eye wash unit.
· Ensure there is ready access to an emergency shower.
· For Emergencies: Vinyl suit.

ENGINEERING CONTROLS

■ For potent pharmacological agents:
Powders
To prevent contamination and overexposure, no open handling of powder should be allowed.
· Powder handling operations are to be done in a powders weighing hood, a glove box, or other equivalent ventilated containment system.
· In situations where these ventilated containment hoods have not been installed, a non-ventilated enclosed containment hood should be used.
· Pending changes resulting from additional air monitoring data, up to 300 mg can be handled outside of an enclosure provided that no grinding, crushing or other dust-generating process occurs.
· An air-purifying respirator should be worn by all personnel in the immediate area in cases where non-ventilated containment is used, where significant amounts of material (e.g., more than 2 grams) are used, or where the material may become airborne (as through grinding, etc.).
· Powder should be put into solution or a closed or covered container after handling.
· If using a ventilated enclosure that has not been validated, wear a half-mask respirator equipped with HEPA cartridges until the enclosure is validated for use.
Solutions Handling:
· Solutions can be handled outside a containment system or without local exhaust ventilation during procedures with no potential for aerosolisation. If the procedures have a potential for aerosolisation, an air-purifying respirator is to be worn by all personnel in the immediate area.
· Solutions used for procedures where aerosolisation may occur (e.g., vortexing, pumping) are to be handled within a containment system or with local exhaust ventilation.
· In situations where this is not feasible (may include animal dosing), an air-purifying respirator is to be worn by all personnel in the immediate area. If using a ventilated enclosure that has not been validated, wear a half-mask respirator equipped with HEPA cartridges until the enclosure is validated for use.
· Ensure gloves are protective against solvents in use.
Unless written procedures, specific to the workplace are available, the following is intended as a guide:
· For Laboratory-scale handling of Substances assessed to be toxic by inhalation. Quantities of up to 25 grams may be handled in Class II biological safety cabinets *; Quantities of 25 grams to 1 kilogram may be handled in Class II biological safety cabinets* or equivalent containment systems Quantities exceeding 1 kg may be handled either using specific containment, a hood or Class II biological safety cabinet*,
· HEPA terminated local exhaust ventilation should be considered at point of generation of dust, fumes or vapors.
Assess operations based upon available dust explosion information to determine the suitability of preventative or protective systems as precautionary measures against possible dust explosions. If prevention is not possible, consider protection by use of containment, venting or suppression of dust handling equipment. Where explosion venting is considered to be the most appropriate method of protection, vent areas should preferably be calculated based on Kst rather than an St value. If nitrogen purging is considered as the protective system, it must operate with an oxygen level below the limiting oxygen concentration. The system should include an oxygen monitoring and shut-down facility in the event of excessive oxygen being detected.
The maximum surface temperature of enclosures potentially exposed to this material should be based on values obtained by taking 2/3 of the minimum ignition temperature (MIE) of the dust cloud. The effect of dust layers should be reviewed.
An isolated (insulated) human body can readily produce electrostatic discharges in excess of 50 mJ, but have been recorded up to 100 mJ.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

State	Divided Solid	Molecular Weight	801.94
Melting Range (°F)	354	Viscosity	Not Applicable
Boiling Range (°F)	Not Applicable	Solubility in water (g/L)	Partly Miscible

Flash Point (°F)	Not Available	pH (1% solution)	1.9
Decomposition Temp (°F)	401	pH (as supplied)	Not Applicable
Autoignition Temp (°F)	824- 860	Vapour Pressure (mmHG)	Not Available
Upper Explosive Limit (%)	Not Available	Specific Gravity (water=1)	Not Available
Lower Explosive Limit (%)	Not Available	Relative Vapor Density (air=1)	Not Available
Volatile Component (%vol)	Not Available	Evaporation Rate	Not Available

APPEARANCE

White to pale yellow crystalline powder; does not mix well with water (4-5 g/l). Soluble in methanol. 95% 0f particles are less than 28.2 um. Flammability Color Physical State Odor Miscibility with water - White Yellow Solid Partly Miscible

log Kow 3.47 (ph 5, 25 C); 3.298 (pH 7, 25 C); 3.23 (pH 9, 25 C).

Material	Value

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY

· Presence of incompatible materials.
· Product is considered stable.

STORAGE INCOMPATIBILITY

■ Avoid reaction with oxidizing agents.

For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

atazanavir sulfate

TOXICITY AND IRRITATION

ATAZANAVIR SULFATE:
■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
Oral (Mouse) LDLo: 800 mg/kg *	
Maximum (None) nonlethal: dose rat 1600	

■ Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.

Repeated dose toxicity:

3 months oral m(daily) mose study: NOAEL 20 mg/kg (males). Effects include liver toxicity, increased organ weights including liver and spleen.
3 month dietary (daily) mouse study: LOAEL 250 mjg/kg (males and females). Effects include
increased liver weight, liver toxicity, decreased body weight. changes in lipid metabolism, faecal changes, changes in white blodd cell parameters, increased weights including thymus.
3 months oral (daily) rat study with recovery period (3 months): LOAEL 300 mg/kg (males). Effects include increase in blood cholestrol, minimal changes in clinical pathology parameters, minimal changes in clinical chemistry parameters, hypercalcaemia, decreased white blood cell count, increased organ weights including liver, heart.. Microscopic changes were observed in the lymphatic system.
6 months oral (daily) rat study with recovery period (2 months): LOAEL 100 mg/kg (males and females): Effects include increase in blood cholestrol, increased water consumption, increased urine volume, effects on glucose metabolism, decreased white blood cell count, hypercalcaemia, increased organ weights including adrenal glands, liver testes, heart, kidney. Effects still present

after recovery include increased organ weights including liver. After recovery, all parameters returned to normal.
9 month oral dog study: :LOAEL 30 mg/kg (males and females). Effects include changes in clinical pathology parameters, increased water consumption, increased urine volume, changes in organ weights including heart, liver.

Genetic toxicity:

In vitro:

Ames rfeverse-mutation assay - negative
Chromosome aberration test in vivo - positive
In vivo
Oral, repeat-dose micronucleus assay (rat) - negative
Oral, unscheduled DNA synthesis assay (rat) - negative
Mutagenicity Assessment
No considered a mutagen according to 29 CFR 1910, 67/348/EC or Canadian Controlled Products Regulations

Carcinogenicity:

104 weeks oral mouse study: NOAEL 80 mg/kg ()males)
104 weeks oral mouse study: NOAEL 120 mg/kg (females) Tumor organs: liver. Effects include death
104 weeks oral rat study: LOAEL = ? (males and females): effects include decreased body weight, alopecia.
Carcinogenicity Assessment: the relevance for human risk assessment is unknown.

Reproductive toxicity:

Oral (daily) study of female and early embryonic development (rat): NOAEL 375 mg/kg (parent, males): paternal effects include decreased weight gain, decreased food consumption, decreased body weight.
Oral (daily) study of fertility and early embryonic development (rat): LOAEL (lowest-observed adverse effect level) 100 mg/kg (parent, females). Maternal effects include decreased weight gain, decreased body weight, salivation.
Oral (daily) study pere- and postnatal development (rat): LOAEL 1000 mg/kg (parents, females): Maternal effects include decreased weight gain, decreased body weight, salivation:. No effects were observed in the foetus/ embryo.
Assessment Reproductive Toxicity: No effects were found on mating or fertility.
Developmental Toxicity
Oral (daily) reproductive and developmental study (rat): LOAEL 200 mg/kg (parent, females). Maternal effects include decreased weight gain, decreased food consumption, faecal changes. No effects were observed in the foetus/ embryo.
Oral (daily) reproductive and developmental toxicity study (rabbit): LOAEL 60 mg/kg (parents, females). Maternal effects include decreased food consumption, decreased weight gain. No effects were observed in the foetus/ embryo.
Developmental Toxicity Assessment: Did not show teratogenic effects in animal experiments.
Human experience: Clinical trials
Oral route, patient population 400 mg - symptoms include rash, jaundice, abnormal liver changes, changes in ECG parameters.
Target organs include heart, liver.
* BMS MSDS

Section 12 - ECOLOGICAL INFORMATION

No data

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
atazanavir sulfate	No Data Available	No Data Available		

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Instructions

All waste must be handled in accordance with local, state and federal regulations.
¦ Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.
A Hierarchy of Controls seems to be common - the user should investigate:

· Reduction
· Reuse
· Recycling
· Disposal (if all else fails)
This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.
DO NOT allow wash water from cleaning equipment to enter drains. Collect all wash water for treatment before disposal.
· Recycle wherever possible.
· Consult manufacturer for recycling options or consult Waste Management Authority for disposal if no suitable treatment or disposal facility can be identified.

Section 14 - TRANSPORTATION INFORMATION

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: DOT, IATA, IMDG

Section 15 - REGULATORY INFORMATION

atazanavir sulfate (CAS: 229975-97-7) is found on the following regulatory lists;
"Canada - Alberta Occupational Exposure Limits","Canada - Prince Edward Island Occupational Exposure Limits"

Section 16 - OTHER INFORMATION

LIMITED EVIDENCE
■ Inhalation and/or ingestion may produce health damage*.
■ Cumulative effects may result following exposure*.
■ May produce discomfort of the respiratory system*.
* (limited evidence).

Reasonable care has been taken in the preparation of this information, but the author makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The author makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use. For additional technical information please call our toxicology department on +800 CHEMCALL.

■ Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.
A list of reference resources used to assist the committee may be found at:
www.chemwatch.net/references.

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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